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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/517,177

02/15/2005

Anatoliy A. Kosterev

1789-11102

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10/10/2006

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EXAMINER

VALENTIN, JUAN D

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/517,177

Applicant(s)

KOSTEREV, ANATOLIY A.

Examiner

Juan D. Valentin II

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> .                                  | 6) <input type="checkbox"/> Other: ____.                          |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :01/31/2005, 02/24/2005,3/11/2005.

## DETAILED ACTION

### *Claim Objections*

1. Claim 11 recites the limitation "the material" in line 1. There is insufficient antecedent basis for this limitation in the claim.
2. Claim 12 recites the limitation "the quartz resonant element" in line 1. There is insufficient antecedent basis for this limitation in the claim.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 13, 15 rejected under 35 U.S.C. 102(b) as being anticipated by Kosterev et al. (Quartz-enhanced photoacoustic spectroscopy, applicants IDS 02/24/2005).

### **Claims 1, 13, 15**

Kosterev discloses a method for performing photoacoustic spectroscopy (PAS) of a sample, the method comprising providing a laser light source configured to introduce light having at least one wavelength into the sample such that at least one molecule within the sample is stimulated such that it resonates at the wavelength(s) and further modulated at an acoustic frequency so that the acoustic detector resonates at said resonant acoustic frequency, generating

Art Unit: 2877

an acoustic signal, accumulating the acoustic signal in a resonant acoustic detector, and displaying an output signal indicative of the acoustic signal (entire document).

4. Claims 1-4, 8, 9, 13, 14 rejected under 35 U.S.C. 102(b) as being anticipated by Bell (USPN '125).

**Claims 1-4, 9, 13**

Bell in conjunction with Fig. 1, discloses a method for performing photoacoustic spectroscopy (PAS) of a sample, the method comprising providing a laser light source 15 (claim 9, col. 3, line 35) configured to introduce light having at least one wavelength into the sample such that at least one molecule within the sample is stimulated such that it resonates at the wavelength(s) and further modulated at an acoustic frequency so that the acoustic detector resonates at said resonant acoustic frequency (claims 2-4, col. 3, lines 40-44, 59-61), generating an acoustic signal, accumulating the acoustic signal in a resonant acoustic detector, and displaying 46, 48, 53 an output signal indicative of the acoustic signal (abstract, col. 2, lines 14-19 & 45-59, col. 3, line 30-col. 4, line 14, col. 4, line 44-col. 5, line 60).

**Claims 8, 14**

Bell as applied above further discloses using an amplifier prior to outputting the acquired measurement signal (col. 8, line 65-col. 9, line 7).

5. Claim 15 rejected under 35 U.S.C. 102(b) as being anticipated by Asano et al. (USPN '413, hereinafter Asano).

**Claim 15**

Art Unit: 2877

Asano discloses an acoustic detector comprising a piezoelectric material, the piezoelectric material configured to accumulate acoustic signals (col. 3, line 60-col. 4, line 13).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5-6, 8 rejected under 35 U.S.C. 103(a) as being unpatentable over Bell in view of applicants admitted prior art ("BACKGROUND OF THE INVENTION").

**Claims 5-6, 8**

Bell substantially teaches the claimed invention except that it fails to show the relationship between Q (number of oscillation periods) and f (resonant acoustic frequency). Applicant shows that the relationship between Q and f is common and well known ("BACKGROUND OF THE INVENTION" of applicant's originally filed specification) for a typical photoacoustic spectroscopy system. It would have been obvious to someone of ordinary skill in the art to combine the device of Bell with the well-known relationship between Q and f of applicants prior art disclosure for the purposes of providing sample concentration measurements.

7. Claims 10-12 rejected under 35 U.S.C. 103(a) as being unpatentable over Bell in view of Asano.

**Claims 10-12**

Bell substantially teaches the claimed invention except that it fails to show wherein the acoustic detector comprises a low-loss crystal material (piezoelectric quartz) in the shape of a resonant tuning fork. Asano shows that it is known to provide an acoustic detector comprising a low-loss crystal material (piezoelectric quartz) in the shape of a resonant tuning fork (col. 3, line 60-col. 4, line 13) for an photo acoustic spectrometer system. It would have been obvious to someone of ordinary skill in the art to combine the device of Bell with the tuning fork resonator of Asano for the purposes of providing selective acquisition of sound signals from the particles or gas being detected and not responding to noises in frequency ranges other than that of the sound signals, whereby highly accurate measurement of the concentration becomes possible (Asano, col. 2, lines 41-47).

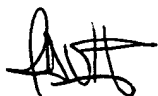
***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan D. Valentin II whose telephone number is (571) 272-2433. The examiner can normally be reached on Mon.-Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2877

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Juan D Valentin II  
Examiner 2877  
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September 30, 2006



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